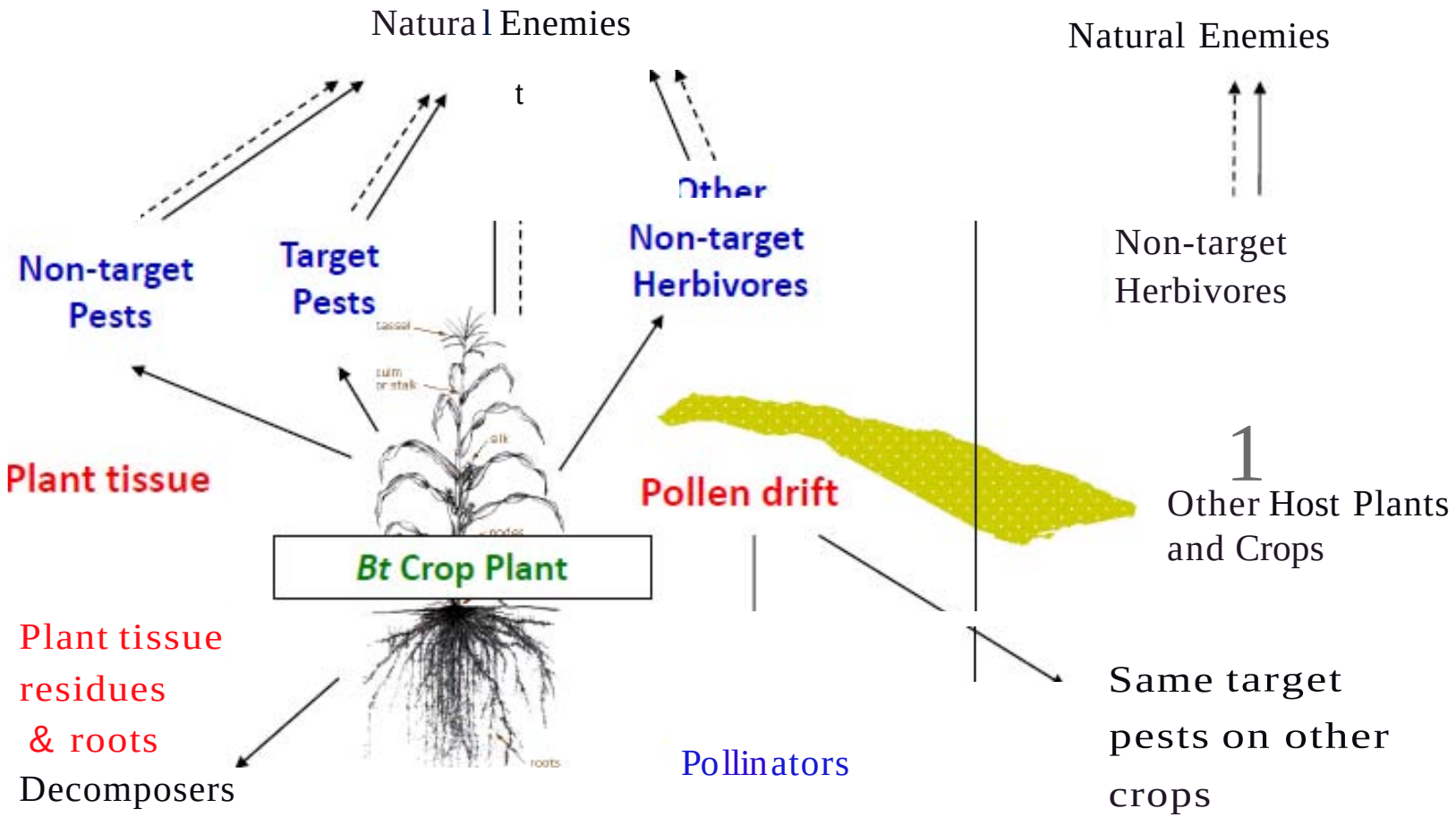
Quelques questions posées

- Persistance, Flux de gènes ?
- Transferts Plante Microorganismes ?
- Impact sur Organismes Cibles ?
- **Impact sur Organismes Non Cibles ?**
- Impact sur la conduite de la culture….?
- Impact sur les processus biochimiques ?
- Impact sur la santé humaine et animale ?

Voies d'exposition potentielle à la toxine



Source: CERA , Mexique 2011

Niveau plante

Polen

Nectar

Pucerons

Acariens

Niveau proies herbivores

Psyllidae

Larves Chrysomelidae

Chenilles

Larve Curculionidae

Larves guêpes

Niveau proies carnivores

Coccinelles (cannibalisme)

Niveau plante

Polen

Nectar

Niveau proies herbivores

Pucerons

Acariens

Psyllidae

Larves Chrysomelidae

Chenilles

Larve Curculionidae

Larves guêpes

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Niveau plante

Polen

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Coccinelles (cannibalisme)

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Nectar

Niveau proies herbivores

Pucerons

Acariens

Psyllidae

Larves Chrysomelidae

Chenilles

Larve Curculionidae

Niveau proies carnivores

Larves guêpes

Coccinelles (cannibalisme)

Autre Ref: Whitehouse *et al*., Austral Ecology, 2010. From lynx spiders to cotton: behaviourally mediated predator effects over four trophic levels.

Niveau plante

Polen

Nectar

Pucerons

Acariens

Niveau proies herbivores

Psyllidae

Larves Chrysomelidae

Chenilles

Larve Curculionidae

Larves guêpes

Niveau proies carnivores

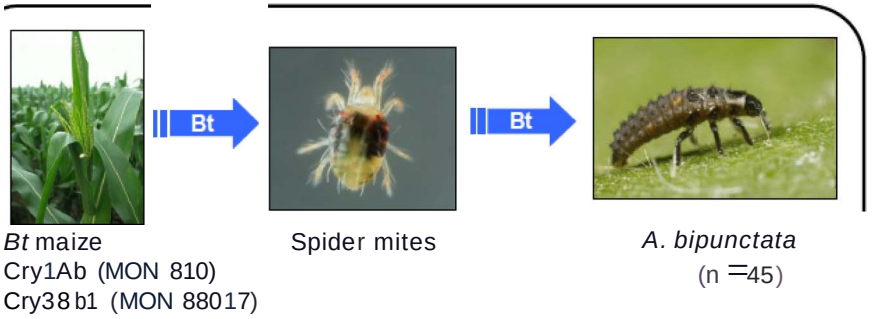
Coccinelles (cannibalisme)

Transgenic Res (2011) 20:467–479
DOI 10.1007/s11248-010-9430-5

ORIGINAL PAPER

Laboratory toxicity studies demonstrate no adverse effects of Cry1Ab and Cry3Bb1 to larvae of *Adalia bipunctata* (Coleoptera: Coccinellidae): the importance of study design

Fernando Álvarez-Alfagem · Franz Bigler · Jörg Romeis



Bt maize
Cry1Ab (MON 810)
Cry3Bb1 (MON 88017)

Spider mites

A. bipunctata
(n = 45)

Measurement endpoints:

- Development time (neonate to L3)
- Larval mortality
- Larval dry weight (L3)

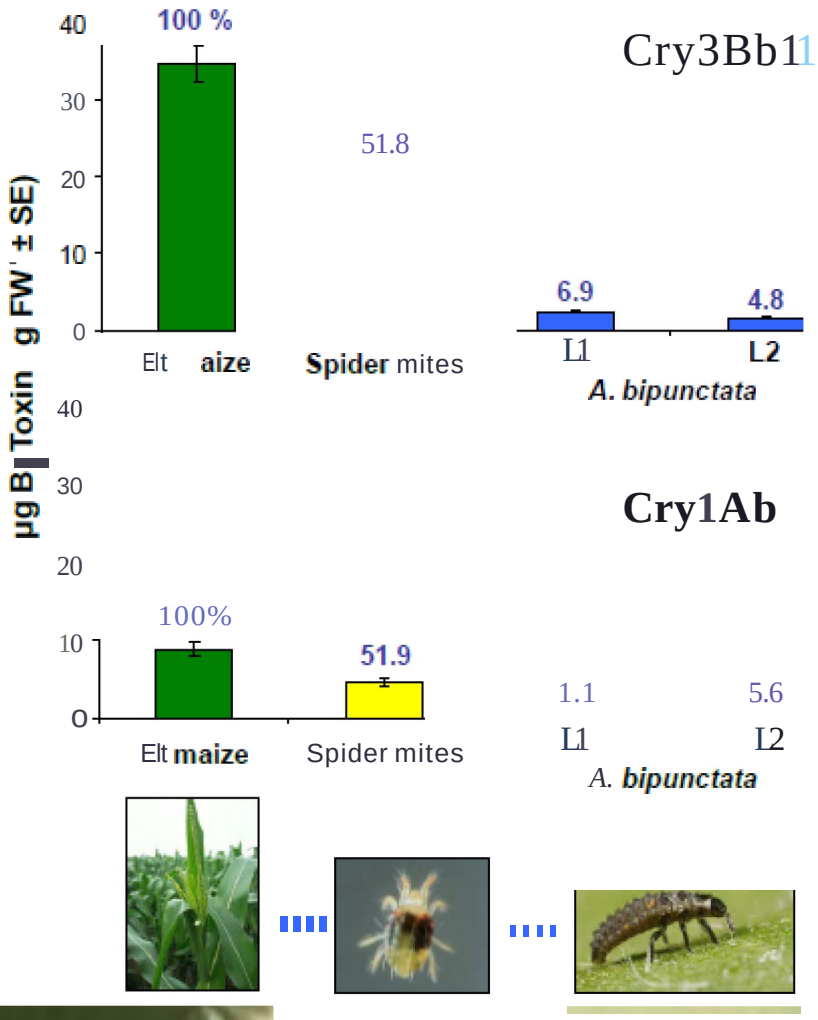
Confirmation of exposure:

ELISA of plant and insect material

No adverse effects detected

(Source: CERA, Inde, J. Romeis, 2011)

Cry , otein transfer: laboratory



Cry protein levels were >1 60 ti es hig er ha that measured in the field !

(Source: CERA, Inde, J. Romeis, 2011)

Direct feeding loassay

Test compounds | Sucrose | *A.* ***bipunctata*** (n >31)

Test cOImpounds:

- Purified Cry Ab, Cry3Blb1 (known purity and bioacf vlty)
- Positive contrails: snowdrop ectin (GNA), potassiUlm arsenate (PA)

Method:

- Larvae fed tesi compounds during the first day of each larval s age
- Cry protein concentration 10 x hlg er that in sp'der mites

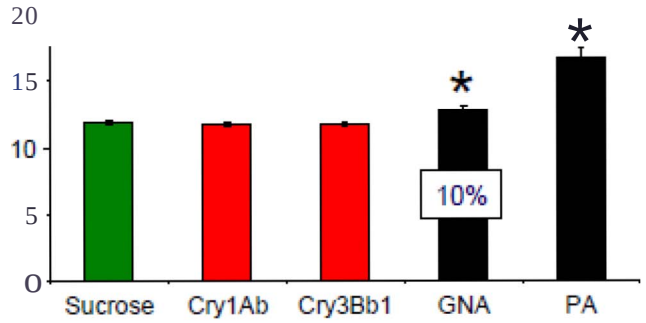
Measuremen endpain s:

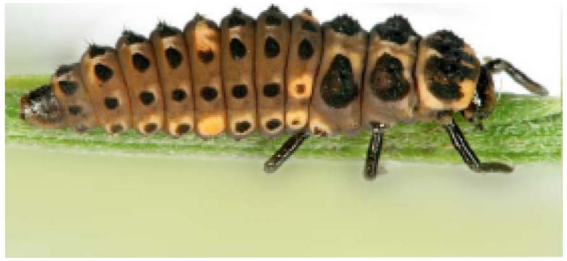
- Development time (neonate to adul emergence)
- Larval mortality
- AdUllt dry weight

(Source: CERA, Inde, J. Romeis, 2011)

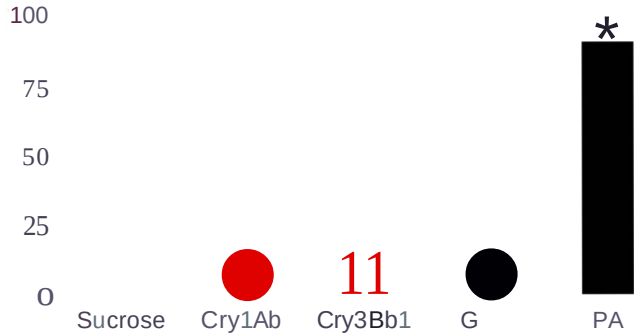
i ect fee : 9 loassay

Development ime (days ± SE)

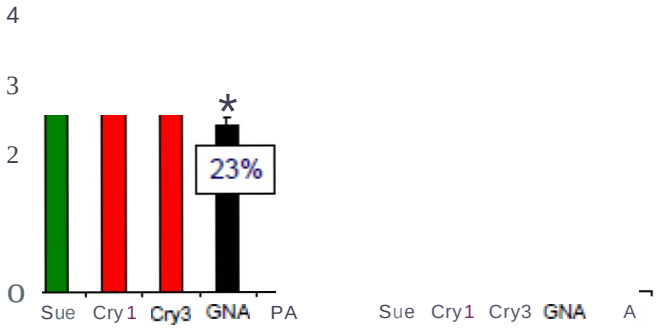




Larval mortality (%)



Adult dry weight (mg ± SE)



(Source: CERA, Inde, J. Romeis, 2011)

Arthropodes non cibles (ravageurs secondaires)

Des exemples issus de la réalité…